

The Claims

What is claimed is:

- 5 1. A process for managing a photovoltaic solar module comprising a plurality of solar cells connected electrically in series between two external connections as a function of instantaneous incident light, the process comprising:
 - 10 detecting at least two variable measurement signals, which depend on the incident light, on at least two solar cells spaced from each other in the solar module and defined as detection cells;
 - evaluating the at least two variable measurement signals in an evaluation circuit;
 - using a switching device slaved to the evaluation circuit, bypassing the external connections of the solar module when the difference between the measurement signals exceeds a predetermined threshold value; and
 - 15 removing the bypassing of the external connections when the difference between the measurement signals is lower than the threshold value.
- 20 2. The process of claim 1, wherein electrical output signals created directly by the detection cells are evaluated as measurement signals.
- 25 3. The process of claim 1, wherein the at least two variable measurement signals are voltages.
4. The process of claim 1, wherein the at least two variable measurement signals are currents.
5. The process of claim 1, wherein temperatures detected on the detection cells are evaluated as measurement signals.
- 30 6. A process for managing a plurality of solar cells electrically connected in series in a photovoltaic module between two external connections, the process comprising:

spacing at least two of the solar cells from each other and defining the spaced solar cells as detection cells;

detecting a measurement signal from each of the detection cells, the measurement signal varying as a function of instantaneous incident light;

5 comparing the measurement signals in an evaluation circuit; and

bypassing the external connections of the solar module when a difference between the measurement signals exceeds a predetermined threshold value.

7. The process of claim 1, further comprising:

10 removing the bypassing of the external connections when the difference between the measurement signals does not exceed the threshold value.

8. The process of claim 1, wherein the measurement signals are voltages.

15 9. The process of claim 1, wherein the measurement signals are currents.

10. The process of claim 1, wherein the spaced solar cells are disposed proximate different edges of the photovoltaic module.

20 11. A solar module comprising a first module comprising:
a plurality of individual solar cells connected together electrically in series,
with at least two of the solar cells being spaced from each other and serving as sensors for
creating measurement signals as a function of instantaneous incident light on the solar
module;

25 an evaluation circuit for comparing the measurement signals;
a switching device slaved at least indirectly to the sensor so as to act on the
output electric power of the solar module; and

30 a shunt that bypasses the series circuit of at least some of the solar cells
when a difference between the measurement signals exceeds a predetermined threshold
value.

12. The solar module of claim 11, wherein the solar cells serving as sensors are not integrated into the series circuit of the other solar cells and are linked only to the evaluation circuit for the transferring of the measurement signals.

5 13. The solar module of claim 11, wherein the solar cells serving as sensors are integrated into the series circuit of the other solar cells and are linked in addition to the evaluation circuit for the transferring of the measurement signals.

10 14. The solar module of claim 11, wherein the evaluation circuit and the switching circuit are disposed within the solar module.

15. The solar module of claim 11, wherein the plurality of individual solar cells are provided in at least two pairs of cells with a separate switching device provided to each pair.

15 16. The solar module of claim 11, wherein the solar cells are connected electrically in a series circuit between two external connections, and the switching device separates the series circuit from at least one of the external connections upon activation by the evaluation circuit.

20 17. The solar module of claim 11, wherein the solar cells used as sensors are each disposed proximate an edge of the solar module.

25 18. The solar module of claim 11, wherein the switching device comprises an electromechanical relay.

19. The solar module of claim 11, wherein the switching device comprises a semiconductor power switch able to be slaved.

30 20. The solar module of claim 11, wherein the evaluation circuit switches the switching device into a quiescent state when substantially identical incident light is received on the solar cells used as sensors.

21. The solar module of claim 11, further comprising at least one additional first module, wherein the first modules are connected to each other in series.